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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,782	06/20/2001	Claude Basso	RAL920000111US1	3663
25299	7590	04/20/2005	EXAMINER	
IBM CORPORATION PO BOX 12195 DEPT 9CCA, BLDG 002 RESEARCH TRIANGLE PARK, NC 27709			ZHEN, LI B	
			ART UNIT	PAPER NUMBER
			2194	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/885,782	Applicant(s) BASSO ET AL.	
	Examiner Li B. Zhen	Art Unit 2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-9 and 11-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-9 and 11-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Claims 1, 3-9 and 11-16 are pending in the application.

Response to Arguments

2. Applicant's arguments with respect to claims 1,3-9 and 11-16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 3-9 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent NO. 6,496,510 to Tsukakoshi [cited in previous office action] in view of U.S. Patent No. 6,643,269 to Fan et al. [hereinafter referred to as Fan] further in view of U.S. Patent NO. 6,876,625 to McAllister et al. [hereinafter referred to as McAllister].**

5. As to claim 1, Tsukakoshi teaches the invention substantially as claimed including a network environment [a network in which a cluster-type router is used; col. 3, lines 40 – 65] including one or more network processing (NP) devices [router node 12, Fig. 1; col. 3, lines 65 – 67; col. 4, lines 50 – 67] implemented for communicating packets [each router node exchanges routing protocol packets with other routers; col. 2,

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lines 3 – 8], each NP device supporting a forwarding table [Each router node 12 generates the routing table 22 from the link state database 21 for use in packet forwarding; col. 4, lines 50 – 57] comprising entries to enable forwarding of received data packets [routing table 22 generated by each router node 12 in the cluster-type router 11 according to the SPF algorithm contains one or more entries; col. 4, lines 57 – 67] from a source device to a destination device [the packet sender/receiver 17 of the router node 12 sends and receives routing protocol packets; col. 5, lines 34 – 45] according to a routing protocol via a network connection [router 25 transfers routing protocol packets to or from the cluster-type router 11 to get network connection information; col. 3, lines 43 – 63], the network processing device receiving forwarding table entries from one or more network control devices executing one or more routing protocol applications [packet sender/receiver 17 sends update information to the database integrator 18 and the routing table calculator 19 to inform them that the link state database 21 has been updated, and passes the update contents to them; col. 5, line 45 – col. 6, line 8], a method for updating forwarding table entries comprising:

a) generating for each forwarding table entry update a data structure [packet sender/receiver 17 sends update information to the database integrator 18 and the routing table calculator 19 to inform them that the link state database 21 has been updated, and passes the update contents to them; col. 5, lines 43 – 49] indicating identification of the routing protocol application [database contains, for the cluster-type router 11 and each router 25 connected to the cluster-type router 11, information on the router ID; col. 4, lines 30 – 43] and a version of a particular routing protocol application

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instance generating the entry update [packet sender/receiver 17 checks if the received network connection information matches the contents of the link state database 21; col. 6, lines 27 – 48], the data structure received by the existing forwarding table and incorporated within a respective forwarding table entry [Upon receiving information from the packet sender/receiver 17 saying that the link state database 21 has been updated...the routing table calculator 19...writes the result into the routing table 22; col. 5, lines 48 – 60];

e) deleting the designated forwarding table entries, whereby forwarding table entries in the existing forwarding table are updated efficiently without disrupting packet forwarding process [If they do not match, that is, if the existing information must be updated or deleted or new information must be added, the packet sender/receiver 17 updates the link state database 21; col. 6, lines 27 – 47].

6. Although Tsukakoshi teaches the invention substantially as claimed, Tsukakoshi does not specifically teach incrementing a version value of that re-started routing protocol application instance upon re-starting a failed routing protocol application in a network control device.

However, Fan teaches incrementing a version value of that re-started routing protocol application instance [device that receives a neighbor status message with a session number greater than its current session number will increment its session number to the received session number; col. 15, lines 47 – 57 and col. 4, line 57 – col. 5, line 11] upon re-starting a failed routing protocol application in a network control device [Topology reconfiguration scenarios include network initialization, insertion of

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devices, deletion of devices, topology changes that do not involve insertion or deletion of devices, and combining of operating networks; col. 11, lines 48 – 65].

7. It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the teaching of incrementing a version value of that re-started routing protocol application instance upon re-starting a failed routing protocol application in a network control device as taught by Fan to the invention of Tsukakoshi because this allows other nodes to detect topology change and modify routing tables and other information stored at the node related to the topology [col. 3, lines 6 – 19 of Fan].

8. Tsukakoshi as modified does not specifically teach identifying for deletion forwarding table entries having data structures matching a designated selection criteria and updating forwarding table without disrupting packet forwarding process.

However, McAllister teaches a method for updating forwarding table entries of an existing forwarding table when a routing protocol application has failed in a network control device [col. 21, lines 7 – 25], updating the data structure of the existing forwarding table entries [col. 21, lines 43 – 67], identifying for deletion forwarding table entries having data structures matching a designated selection criteria [col. 15, lines 57 – 64] and updating forwarding table without disrupting packet forwarding process [col. 23, lines 1 – 16].

9. It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the teaching of identifying for deletion forwarding table entries having data structures matching a designated selection criteria and updating forwarding table without disrupting packet forwarding process as taught by McAllister to the

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invention of Tsukakoshi as modified because provide a method and apparatus for database re-synchronization in a network having a topology state routing protocol, particularly well-suited to the context of redundancy recovery following a nodal failure associated with the routing entity of a network node, and pursuant to which some of the problems exhibited by alternative prior art techniques and devices may in some instances be alleviated or overcome [col. 4, lines 36 – 45 of McAllister].

10. As to claim 9, Tsukakoshi as modified teaches a system for ensuring packet routing in a networking environment [a network in which a cluster-type router is used; col. 3, lines 40 – 65 of Tsukakoshi] including one or more network processing (NP) devices [router node 12, Fig. 1; col. 3, lines 65 – 67; col. 4, lines 50 – 67 of Tsukakoshi] implemented for communicating packets [each router node exchanges routing protocol packets with other routers; col. 2, lines 3 – 8 of Tsukakoshi], each NP device supporting a forwarding table [Each router node 12 generates the routing table 22 from the link state database 21 for use in packet forwarding; col. 4, lines 50 – 57 of Tsukakoshi] comprising entries to enable forwarding of received data packets [routing table 22 generated by each router node 12 in the cluster-type router 11 according to the SPF algorithm contains one or more entries; col. 4, lines 57 – 67 of Tsukakoshi] from a source device to a destination device [the packet sender/receiver 17 of the router node 12 sends and receives routing protocol packets; col. 5, lines 34 – 45 of Tsukakoshi] according to a routing protocol via a network connection [router 25 transfers routing protocol packets to or from the cluster-type router 11 to get network connection information; col. 3, lines 43 – 63 of Tsukakoshi], the network processing device

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receiving updated forwarding table entries from one or more network control devices executing one or more routing protocol applications [packet sender/receiver 17 sends update information to the database integrator 18 and the routing table calculator 19 to inform them that the link state database 21 has been updated, and passes the update contents to them; col. 5, line 45 – col. 6, line 8 of Tsukakoshi], the system comprising:

control mechanism for generating a data structure [packet sender/receiver 17 sends update information to the database integrator 18 and the routing table calculator 19 to inform them that the link state database 21 has been updated, and passes the update contents to them; col. 5, lines 43 – 49 of Tsukakoshi] indicating identification of the routing protocol application [database contains, for the cluster-type router 11 and each router 25 connected to the cluster-type router 11, information on the router ID; col. 4, lines 30 – 43 of Tsukakoshi] and a version of a particular routing protocol application instance for each entry of an existing forwarding table [packet sender/receiver 17 checks if the received network connection information matches the contents of the link state database 21; col. 6, lines 27 – 48 of Tsukakoshi], said control mechanism further incrementing a version value of a routing protocol application instance [col. 15, lines 47 – 57 and col. 4, line 57 – col. 5, line 11 of Fan] in response to re-starting that routing protocol application that has failed in a network control device [col. 11, lines 48 – 65 of Fan];

communications interface for enabling forwarding of the data structure to include said incremented version values [col. 15, lines 47 – 57 and col. 4, line 57 – col. 5, line 11 of Fan] of re-started routing protocol application instances to the NP device [Upon

receiving information from the packet sender/receiver 17 saying that the link state database 21 has been updated; col. 5, lines 48 – 60 of Tsukakoshi];

mechanism for incorporating received updated data structures into the forwarding table entry when updating the forwarding table entry [the routing table calculator 19...writes the result into the routing table 22; col. 5, lines 48 – 60 of Tsukakoshi]; and,

synchronization mechanism for identifying forwarding table entries having data structures matching a designated selection criteria and deleting those forwarding table entries having data structures matching the designated selection criteria [col. 15, lines 57 – 64 of McAllister], whereby old forwarding table entries in the forwarding table are updated efficiently without disrupting packet forwarding process [col. 23, lines 1 – 16 of McAllister].

11. As to claim 3, Tsukakoshi as modified teaches the selection criteria includes an identification of the routing protocol application [col. 10, lines 28 – 49 of McAllister] and the step of identifying for deletion the forwarding table entries having data structure indicating a specific routing protocol application [col. 15, lines 57 – 64 of McAllister].

12. As to claim 4, Tsukakoshi as modified teaches the selection criteria includes a range of values indicating versions of particular routing protocol application instances and identifying for deletion the forwarding table entries having a data structure indicating a routing protocol application version value falling within a specific range of protocol application versions [col. 12, lines 6 – 32 of McAllister].

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13. As to claim 5, Tsukakoshi as modified teaches the method for updating forwarding table entries is performed by one or more network control devices [database integrator 18 in the receiving router node 12, which receives the update information, reflects the update information on its own link state database 21; col. 5, lines 60 – 63 of Tsukakoshi].

14. As to claim 6, Tsukakoshi as modified teaches generating the selection criteria [col. 10, lines 28 – 49 of McAllister].

15. As to claim 7, Tsukakoshi as modified teaches the step of generating the selection criteria is performed by the one or more network control devices [col. 22, lines 42 – 56 of McAllister].

16. As to claim 8, Tsukakoshi as modified teaches the forwarding table is a binary tree structure having leaves comprising the table entries [col. 7, lines 22 – 48 of McAllister] and the step of implementing a scanning technique for ascertaining the indicated protocol application version number values at each of the leaves [col. 10, lines 3 – 18 of McAllister].

17. As to claims 11 – 14, these are rejected for the same reasons as claims 3 – 4, 6 and 8 above.

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18. As to claims 15 and 16, Tsukakoshi as modified teaches the updating of the forwarding table entries is accomplished without disrupting network connectivity by having to reconstruct a new forwarding table [col. 23, lines 1 – 16 of McAllister].

Conclusion


19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li B. Zhen whose telephone number is (571) 272-3768. The examiner can normally be reached on Mon - Fri, 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Li B. Zhen
Examiner
Art Unit 2194

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SUE LAO
PRIMARY EXAMINER